

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 378 421 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
09.06.1999 Bulletin 1999/23

(51) Int. Cl.⁶: **A01K 1/015**

(21) Application number: **90300339.0**

(22) Date of filing: **11.01.1990**

(54) **Animal dross absorbent and method**

Tierstreu und Verfahren

Litière pour animaux et procédé

(84) Designated Contracting States:
DE FR GB NL

(30) Priority: **13.01.1989 US 297471**
18.10.1989 US 423193

(43) Date of publication of application:
18.07.1990 Bulletin 1990/29

(73) Proprietor:
AMCOL INTERNATIONAL CORPORATION
Arlington Heights, Illinois 60004 (US)

(72) Inventor: **Hughes, John**
Arlington Heights, Illinois 60004 (US)

(74) Representative:
McCall, John Douglas et al
W.P. THOMPSON & CO.
Coopers Building
Church Street
Liverpool L1 3AB (GB)

(56) References cited:
DE-A- 3 620 447 **US-A- 2 649 759**
US-A- 4 591 581 **US-A- 4 671 208**
US-A- 4 686 937

*Suggests
separation between
swellable
and non swellable*

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 378 421 B1

FA

Description

[0001] The present invention relates to an absorbent composition for animal dross and its method of use. More particularly, the present invention relates to a composition comprising at least 65% water-swella-

5 sodium bentonite clay. Discrete particles of water-swella-

10 sodium bentonite clay effectively absorb animal dross and simultaneously agglomerate into a sufficiently large and stable mass, such that the wetted mass of absorbent composition can be separated from unwetted particles of the composition and removed from a litter box.

BACKGROUND OF THE INVENTION AND PRIOR ART

[0002] House-broken animals, such as cats, are trained into the habit of urinating and defecating in a specially provided litter box. Similarly, untrained and caged animals, such as guinea pigs, urinate and defecate on the floor of their cage, often in approximately the same floor area of the cage. Consequently, pet owners, homeowners, veterinarians and laboratory personnel have added absorbent materials to the litter box or cage to collect the urine and feces. After a relatively short period of time, the dross-soiled absorbent emits objectionable odors because of the presence of the urine and fecal matter.

[0003] In order to reduce or eliminate these objectionable odors, homeowners periodically remove the fecal matter from the litter absorbent physically. However, physical removal of the feces does not reduce or eliminate odors caused by the urine absorbed into the absorbent. Therefore, when the odors caused by the absorbed urine become intolerable, the homeowner discards the litter box absorbent material entirely. The homeowner then washes the litter box and refills the litter box with fresh litter box absorbent material. These activities are unpleasant, time-consuming and expensive. Consequently, the litter box absorbent material usually is a relatively inexpensive solid absorbent material, such that an individual cleaning of the litter box is not particularly economically burdensome. However, repeated litter box cleanings over a period of time accounts for relatively large expenditures.

[0004] The most commonly used litter box absorbent materials are inexpensive clays, such as calcined clays, that are safe and non-irritating to the animals, and that absorb relatively substantial amounts of liquids. Other porous, solid litter box absorbent materials, that are used alone or in combination, include straw, sawdust, wood chips, wood shavings, porous polymeric beads, shredded paper, sand, bark, cloth, ground corn husks, cellulose, and water-insoluble inorganic salts, such as calcium sulfate. Each of these absorbent materials has the advantage of low cost, but each suffers from the disadvantage of merely absorbing a liquid waste product

and holding the product within its porous matrices, or, in the case of sand, absorbing the liquid dross on its surface. For each absorbent material, offensive odors are eventually caused by the absorbed urine, and the entire contents of the litter box, including soiled absorbent material and unsoiled absorbent material, has to be discarded.

[0005] One such litter box absorbent material is described in Lohman U.S. Patent No. 4,570,573. The Lohman patent is directed to an animal litter composition comprising about 60-94% by weight paper, about 1-35% calcium sulfate and about 3-12% water. Such an absorbent is effective in collecting animal dross, but it does not reduce or eliminate the generation of objectionable odors and does not eliminate the disadvantage of periodically replacing the entire contents of the litter box. Larson et al in U.S. Patent No. 4,315,761 describes the use of aerated or foaming concrete, of relatively large size, for example, up to 10 mm (millimeters), to absorb animal dross and facilitate removal of the excrement from a litter box. The aerated concrete merely absorbs the animal dross, and therefore suffers from the identical drawback of present day animal litter box compounds, i.e., an inability to easily separate the soiled absorbent particles from the unsoiled absorbent particles without having to clear and clean the entire litter box.

[0006] Stuart, in U.S. Patent No. 4,685,420, discloses an improved litter box absorbent composition comprising from 0.01% to 5.0% by weight of a water-absorbing polyacrylate in combination with a common litter box absorbent material. According to the method and composition of Stuart, the polyacrylate and absorbent material absorb the urine or similar waste material, and the polyacrylates act to gel the soiled litter box absorbent material into a gelled product. Stuart teaches that the gelled absorbent material then can be physically removed from the litter box to reduce the generation of offensive odors, and to avoid discarding the unsoiled portion of the absorbent material. However, the method and composition of Stuart suffers from the disadvantage of relative cost ineffectiveness. The commonly used litter box absorbent materials are very inexpensive materials, whereas the water-absorbent polymers of Stuart are relatively expensive products that can raise the initial cost of the litter box absorbent material to an unacceptable level in a very cost competitive market.

[0007] Other litter box absorbent materials are disclosed by Fisher in U.S. Patent No. 3,765,371 describing a foamed plastic for absorbing and/or adsorbing animal dross; by Kramer et al in U.S. Patent Nos. 4,275,684 and 4,395,357 describing calcium silicate as an animal litter box absorbent material and specifically teaching against the use of mineral products, such as clay-type minerals, because of the mineral product's tendency to swell upon liquid absorption; by Rodriguez et al in U.S. Patent No. 4,494,481 describing the addition of a transition metal of Group Ib or IIb of the peri-

odic table to present-day litter box absorbent materials to prevent the development of urine odors; and by Greenberg in U.S. Patent No. 4,638,763 describing the addition of sodium sulfate to a litter box absorbent material to facilitate removal of soiled absorbent from the litter box.

[0008] Therefore, a need exists for a litter box absorbent material that effectively collects the urine or other dross material of house-broken pets and caged animals; that agglomerates when wetted to allow physical removal of the wetted litter box absorbent material from unwetted litter box absorbent material in order to reduce or eliminate dross-based odors and to reduce costs associated with animal litter box absorbent materials; that is capable of spontaneous dispersion in water after agglomeration so that the material can be discarded to a household waste or storm sewer line, for example, by flushing the dross-soaked, dispersed agglomerates down a household toilet, without clogging plumbing lines; and that is sufficiently economical for practical use in a highly competitive and cost conscious market. Surprisingly and unexpectedly, it has been found that water-swella-
ble bentonite clays effectively absorb animal dross; and during absorption of the animal dross, agglomerate into a sufficiently large and stable mass for physical separation of the soiled portion of the litter box absorbent material from the unused portion of the litter box absorbent material. The water-swella-
ble bentonite clays, and their absorbent and agglomerating properties, effectively reduce or eliminate odors associated with animal dross; reduce costs associated with litter box absorbent material replacement; and are sufficiently economical to complete effectively in a highly competitive and cost conscious industry.

[0009] According to an aspect of the present invention an animal litter absorbent composition capable of agglomerating upon wetting into a mass of sufficient size and of sufficient cohesive strength for physical removal of the agglomerated mass from the litter box, said absorbent composition comprising at least 65% by weight particles of a water-swella-
ble sodium bentonite clay having a particle size ranging from 50 to 3350 microns.

[0010] In accordance with another aspect of the present invention there is provided a litter box comprising a water impermeable receptacle having disposed therein an animal litter composition of the present invention.

[0011] In accordance with yet another aspect of the present invention there is provided a method of selectively removing liquid animal dross from a litter box in accordance with this invention comprising contacting the animal litter composition in the litter box with liquid animal dross thereby producing an agglomerating mass comprising the absorbent composition and the liquid animal dross that is of sufficient size and of sufficient cohesive strength to be removed from the litter box; and removing the agglomerating mass from the litter box

thereby removing the liquid animal dross from the litter box.

[0012] In brief, the present invention is directed to a composition and method of absorbing animal dross.

[0013] The composition comprises discrete particles of a water-swella-
ble sodium bentonite clay that effectively absorbs animal dross and simultaneously agglomerates into a sufficiently large and stable mass, thereby permitting physical separation of the soiled and wetted water-swella-
ble bentonite clay particles from discrete particles of the unsoiled and unwetted water-swella-
ble sodium bentonite clay. The composition may also comprise discrete particles of calcium bentonite clay.

[0014] By use of the present invention one or more of the following advantages may be obtained

(i) an improved absorbent composition for animal waste products and related waste products.

(ii) a composition that effectively absorbs animal dross and simultaneously agglomerates into a mass of sufficient size and cohesive strength for physical removal from unwetted litter box absorbent composition.

(iii) a composition that eliminates or reduces odors associated with animal dross deposited in a litter box.

(iv) a composition that economically eliminates or reduces odors associated with animal dross deposited in a litter box.

(v) a composition that facilitates and reduces cleaning and maintenance of animal litter boxes and animal cages.

(vi) a composition that overcomes the disadvantages of prior art animal litter box absorbent compositions and that is economically competitive with prior art litter box absorbents.

(vii) a composition for absorbing animal dross such that the physical removal of urine from an animal litter box is possible.

(viii) a method of effectively absorbing animal dross with a composition comprising a water-swella-
ble sodium bentonite clay that simultaneously agglomerates into a sufficiently large mass of sufficient strength upon absorbing the animal dross to permit physical separation of soiled and wetted bentonite clay particles from the unsoiled and unwetted bentonite clay particles.

(ix) an animal dross-absorbent composition capable of agglomeration upon contact with animal dross, particularly animal urine, such that the agglomerates are capable of easy and spontaneous dispersion in water for disposal through a household plumbing conduit.

[0015] The above and other advantages of the present invention will become apparent from the following detailed description of the invention.

BRIEF DESCRIPTION OF THE DRAWING

[0016] The drawing is a perspective view of a receptacle including the absorbent composition of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0017] In accordance with the method and composition of the present invention, water-swellable sodium bentonite clays have been found useful as animal dross absorbents. The water-swellable sodium bentonite clays of the present invention provide advantages over prior art animal litter box absorbent compositions in that the water-swellable sodium bentonite clays are capable of absorbing several times their weight in liquid dross material and also are capable of simultaneously agglomerating to form a wetted mass of sufficient size and cohesive strength such that the soiled and wetted mass can be physically separated from the remaining unwetted water-swellable bentonite clay absorbent.

[0018] Sodium bentonite clays are capable of absorbing several times their weight in liquid dross material and also are capable of simultaneously agglomerating and dispersing in water to form a wetted mass of sufficient size and cohesive strength such that the soiled and wetted mass can be physically separated from the remaining unwetted water-swellable sodium bentonite clay absorbent and later dispersed in water for disposal through a household plumbing conduit. These properties of the water-swellable sodium bentonite clays serve to reduce or eliminate odors resulting from urine-saturated litter box absorbents; to reduce the cost of using a litter box absorbent material because only soiled absorbent material is discarded; to reduce the number of times the litter box or animal cage must be completely cleaned; enable periodic disposal of the formed agglomerates through a household sewer conduit. Furthermore, the water-swellable sodium bentonite clays of the present invention provide these cost saving and work saving benefits without adding expensive supplementary compounds, such as water-absorbent polymers, that can prohibitively increase the cost of a product competing in a very cost-conscious market.

[0019] In accordance with an important feature of the present invention, the water-swellable sodium bentonite clays provide an improved animal litter box absorbent composition. The water-swellable sodium bentonite clay of the present invention absorb several times their own weight of an aqueous fluid, such as urine, and consequently swell. The wetted, swelled bentonite particles then interact with nearby wetted and swelled bentonite particles and agglomerate through physical and chemical interactions, such as hydrogen bonding and entanglement, to form a wetted mass of sufficient stability and size such that the mass can be removed from the unwetted particles of the water-swellable sodium bentonite clay. Unexpectedly, agglomerates that include

both sodium bentonite and calcium bentonite then spontaneously disperse when contacted with water, such as in a toilet bowl, for disposal into a waste or storm sewer. The chemical and physical interactions that cause the wetted bentonite clay particles to agglomerate are not present when the bentonite clay particles are dry, hence separation of the wetted, swelled bentonite clay particles from the unwetted and unswelled bentonite clay particles is facilitated.

[0020] In practice, when an animal urinates on the litter box absorbent of the present invention, the urine is absorbed by the water-swellable sodium bentonite to form an agglomerated mass of water-swellable sodium bentonite and urine. This agglomerated mass has sufficient physical integrity to be removed from a litter box, or an animal cage, by using the implements and methods normally used to remove feces from a litter box. Therefore, the litter box absorbent composition of the present invention permits the animal owner or caretaker to employ the same removal techniques used to remove feces from the litter box to remove urine from the litter box. Before the method and composition of the present invention, it was not possible to mechanically remove urine from a litter box utilizing only one or more clay as the absorbent because the urine-soaked particles could not be differentiated from the unsoiled absorbent in the litter box.

[0021] In accordance with an important feature of the present invention, the water-swellable sodium bentonite clay absorbent remaining in the litter box after removal of the urine-soaked and agglomerated bentonite clay still is available for future use. This portion of the litter box absorbent composition is still clean and useful, and does not contribute to the generation of noxious odors. In contrast, when using prior art litter box absorbents, such clean and useful absorbent material because no means existed to effectively separate the soiled absorbent from the fresh absorbent.

[0022] For example, the drawing shows a litter box 10 comprising a water-impermeable floor member 12 having integral, water-impermeable upstanding walls 14. The unsoiled absorbent composition 16, comprising a water swellable sodium bentonite clay is placed in the litter box 10. Solid animal dross 18, such as fecal matter, is of sufficient mass and of sufficient cohesive strength to be physically removed from the litter box for ultimate disposal. Liquid animal dross, such as urine, vomit or blood, contacts the absorbent, water-swellable sodium bentonite composition 16, causing the water-swellable sodium bentonite to agglomerate into a soiled solid mass 20 of sufficient size and sufficient cohesive strength to allow physical removal of the soiled solid mass 20 from the remaining unsoiled absorbent composition 16. The remaining soiled absorbent composition 16 does not contribute to the generation of noxious odors and can remain in litter box 10 for future use. Soiled solid mass 20 is discarded in an appropriate manner without the need of cleaning the entire litter box

10 and discarding its entire contents.

[0023] Therefore, and in accordance with another important feature of the present invention, the water-swella-
ble bentonite clays provide a cost savings over the prior art litter box absorbents. First, cost savings are realized because unsoiled and unused absorbent composition is not discarded with the soiled absorbent composition. Secondly, and most surprisingly and unexpectedly, the water-swella-
ble sodium bentonite clays provide these cost-saving benefits without the addition of expensive polymeric compounds that force the absorbent particles to gel into a removable physical mass. Therefore,, utilizing the water-swella-
ble sodium bentonite clays of the present invention minimizes the raw material cost of the litter box absorbent composition in a cost competitive market.

[0024] The litter box absorbent composition of the present invention comprises, a water-swella-
ble sodium bentonite clay.

[0025] The use of bentonite clays in a variety of applications, such as a component in drilling fluids, is well known. Sodium bentonites are economical, readily available clays, with certain forms capable of hydrating and swelling in the presence of water. The swelling properties of sodium bentonite are related to the exchangeable sodium cations present in the bentonite ore. Sodium bentonite clays often include in smaller quantities a variety of other exchangeable cations including potassium, lithium, ammonium, calcium and magnesium.

[0026] The sodium bentonite clays can be any member of the dioctahedral or trioctahedral smectite group, or a mixture thereof. Examples include Montmorillonite, Beidellite, Nontronite, Hectorite and Saponite; or combinations thereof.

[0027] In order to achieve the full advantage of the present invention it is preferred that the sodium bentonite clay is not calcined. Calcination results a loss of a portion of the hydroxyl groups from the bentonite clay, and such hydroxyl groups are related to the water-absorption and water-swelling properties of the bentonite clay. Consequently, a calcined sodium bentonite clay, while still able to absorb many times its weight of a liquid, may not swell and agglomerate with nearly wetted and calcined sodium bentonite particles as effectively as uncalcined sodium bentonite particles.

[0028] In accordance with another important feature of the present invention, a water-swella-
ble sodium bentonite clay useful in a litter box absorbent composition is present in a particle size ranging from 50 μ (microns) to 3350 μ in diameter, and more preferably in a particle size ranging from 600 μ to 3350 μ in diameter; or, in other words, in a particle size of from about 6 mesh to about 100 mesh. It has been found that a significant percentage of water-swella-
ble sodium bentonite particles appreciably greater than about 3350 μ in diameter do not sufficiently cohesively agglomerate to allow facile physical separation of the wetted, agglomerated mass

from the litter box. Furthermore, it has been found that water-swella-
ble sodium bentonite particles appreciably smaller than about 50 μ in diameter produce a litter box absorbent composition that is too dusty. However, in order to achieve the full advantage of the present invention, the water-swella-
ble sodium bentonite clay should be present in the composition in particle sizes across the entire range of 600 μ to 3350 μ because the smaller diameter water-swella-
ble sodium bentonite particles, upon being wetted, swell and serve as "bridges" between larger, wetted bentonite particles. The overall effect is the production of a sufficiently large wetted mass with excellent physical cohesive strength.

[0029] The litter box absorbent composition of the present invention can consist only of a water-swella-
ble sodium bentonite clay or only of sodium and calcium bentonite clays thereby avoiding any extra compounding process steps. In addition, the litter box absorbent composition of the present invention optionally can include perfumes- deodorants, odor absorbents, antimicrobial agents, disinfectants, colorants and pesticides, in an amount sufficient to perform their intended functions. The litter box absorbent composition also can include other typically used litter box absorbents such as other clays, sand, or cellulose-based materials. However, any optionally added ingredient cannot be present in an amount that materially and adversely affects the ability of the water-swella-
ble bentonite clay to absorb liquid dross products and simultaneously agglomerate into a mass of sufficient size and cohesive strength for physical removal of the soiled and wetted mass from the litter box. Any optional ingredients and additional absorbents are dry-blended into the water-swella-
ble bentonite clay of the present invention.

[0030] The water-swella-
ble sodium bentonite clay should be present in an amount of at least 65% by weight of the composition, and is preferably present in an amount of at least 90% by weight of the composition.

[0031] It should be noted that the animal dross absorbent of the present invention can be used in litter boxes or in cages of animals including, among others, household pets such as cats, dogs, gerbils, guinea pigs, mice and hamsters; other pets such as rabbits, ferrets and skunks; or laboratory animals such as monkeys, mice, rats, goats, horses, cows and sheep. The animal litter absorbent of the present invention is especially useful for smaller animals, such as cats. Furthermore, the water-swella-
ble sodium bentonite clay of the present invention is suitable for other uses in addition to absorbing urine, such as absorbing vomit or absorbing waste liquids in appropriate areas of slaughter houses and meat packing plants.

[0032] To demonstrate the new and unexpected results of the present invention, 454 g. (one pound) of a water-swella-
ble sodium bentonite of the present invention was placed in a plastic litter box. The litter box then was used in a house that included 2 cats as household pets. The cats urinated in the litter box at regular inter-

vals, causing the water-swella-
ble sodium bentonite of
the present invention to agglomerate into sufficiently
large and stable masses for at least daily physical
removal, depending upon the quantity of urine and
feces deposited in the litter box. The unsoiled water-
swella-
ble bentonite was allowed to remain in the litter
box for subsequent use, and it was found that the litter
box was free of offending odors for 14 days. After this
time, the litter box was recharged with more of the
water-swella-
ble bentonite of the present invention.

[0033] At the user's option, the litter box could be com-
pletely cleaned, or an additional amount of the litter
could be added to the small amount of remaining,
unsoiled bentonite clay without cleaning the litter box
because no offensive odors were being generated. In
contrast, present day animal litter absorbents generate
a sufficient amount of offensive odors such that the litter
box must be cleaned at least weekly, and usually at
least twice weekly.

[0034] Obviously, many modifications and variations
of the invention as hereinbefore set forth can be made
without departing from the scope thereof and therefore
only such limitations should be imposed as are indi-
cated by the appended claims.

Claims

1. An animal litter absorbent composition capable of
agglomerating upon wetting into a mass of suffi-
cient size and of sufficient cohesive strength for
physical removal of the agglomerated mass from
the litter box, said absorbent composition compris-
ing at least 65% by weight particles of a water-
swella-
ble sodium bentonite clay having a particle
size ranging from 50 microns to 3350 microns.
2. An animal litter composition as claimed in claim 1,
wherein the absorbent composition comprises at
least 90% by weight water-swella-
ble sodium ben-
tonite clay.
3. An animal litter composition as claimed in any one
of the preceding claims, which also includes cal-
cium bentonite.
4. An animal litter composition as claimed in claim 1, 2
or 3, wherein sodium bentonite clay is present in a
particle size ranging from 50 microns to 600
microns.
5. An animal litter composition as claimed in claim 1, 2
or 3, wherein the water-swella-
ble sodium bentonite
clay is present in a particle size ranging from 600
microns to 3350 microns.
6. An animal litter composition as claimed in claim 5,
wherein said absorbent composition comprises
water-swella-
ble sodium bentonite clay having a par-

ticle size over essentially the entire range.

7. An animal litter composition as claimed in any of the
preceding claims, wherein the water-swella-
ble sodium bentonite clay is a non-calcined water-
swella-
ble sodium bentonite clay.
8. An animal litter composition as claimed in any one
of the preceding claims, wherein said litter product
contains at least one optional component selected
from the group consisting of: perfumes, deodorants,
odor adsorbents, antimicrobial agents, disinfect-
ants, colourants, pesticides, and bentonite clay
other than sodium and calcium bentonite.
9. An animal litter composition as claimed in any one
of the preceding claims, wherein said wetted
agglomerated mass, after removal from the balance
of said litter, is characterised by the property of
being dispersible in water for sewage disposal.
10. An animal litter composition as claimed in any one
of the preceding claims, wherein said litter product
is substantially free of water absorbent polymers.
11. A litter box comprising a water impermeable recep-
tacle having disposed therein an animal litter com-
position of any one of the preceding claims.
12. A method of selectively removing liquid animal
dross from a litter box of claim 11, comprising con-
tacting the animal litter composition in the litter box
of any one of the preceding claims with liquid ani-
mal dross thereby producing an agglomerated
mass comprising the absorbent composition and
the liquid animal dross that is of sufficient size and
of sufficient cohesive strength to be removed from
the litter box; and removing the agglomerated mass
from the litter box thereby removing the liquid ani-
mal dross from the litter box.
13. A method according to claim 16, wherein the liquid
animal dross includes urine, vomit or blood or com-
binations thereof.

Patentansprüche

1. Tierabfall absorbierende Zusammensetzung, die in
der Lage zu Agglomeratbildung nach Befeuchten in
eine Masse ausreichender Größe und ausreichen-
der Kohäsionstärke für physikalische Entfernung
der agglomerierten Masse aus dem Abfallkasten
ist, wobei die absorbierende Zusammensetzung
wenigstens 65 Gew.-% Partikeln aus einem was-
serquellfähigen Natriumbentonitton mit einer Parti-
kelgröße in einem Bereich von 50 Mikron bis 3350
Mikron aufweist.

2. Tierabfallzusammensetzung nach Anspruch 1, bei der die absorbierende Zusammensetzung wenigstens 90 Gew.-% wasserquellfähigen Natriumbentonitton aufweist.
3. Tierabfallzusammensetzung nach einem der vorangegangenen Ansprüche, die weiter Kalziumbentonit enthält.
4. Tierabfallzusammensetzung nach Anspruch 1, 2 oder 3, bei der Natriumbentonitton in einer Partikelgröße in einem Bereich von 50 Mikron bis 600 Mikron vorliegt ist.
5. Tierabfallzusammensetzung nach Anspruch 1, 2 oder 3, bei der der wasserquellfähige Natriumbentonitton in einer Partikelgröße in einem Bereich von 600 Mikron bis 3350 Mikron vorliegt.
6. Tierabfallzusammensetzung nach Anspruch 5, bei der die genannte absorbierende Zusammensetzung wasserquellfähigen Natriumbentonitton mit einer Partikelgröße im wesentlichen über den gesamten Bereich aufweist.
7. Tierabfallzusammensetzung nach einem der vorangegangenen Ansprüche, bei der der wasserquellfähige Natriumbentonitton ein nicht-kalziniertes wasserquellfähiges Natriumbentonitton ist.
8. Tierabfallzusammensetzung nach einem der vorangegangenen Ansprüche, bei der das genannte Abfallprodukt wenigstens eine wahlweise Komponente ausgewählt aus der Gruppe enthält, die besteht aus: Parfümen, Deodorants, Geruch absorbierenden Mitteln, Konservierungsmitteln, Desinfektionsmitteln, Farbstoffen, Pestiziden, und anderem Bentonitton als Natrium- und Kalziumbentonit.
9. Tierabfallzusammensetzung nach einem der vorangegangenen Ansprüche, bei der die genannte befeuchtete agglomerierte Masse nach Entfernung aus dem Gleichgewicht des genannten Abfalls durch die Eigenschaft gekennzeichnet ist, in Wasser für Abwasserentsorgung dispergierfähig zu sein.
10. Tierabfallzusammensetzung nach einem der vorangegangenen Ansprüche, bei der das genannte Abfallprodukt im wesentlichen frei von wasserabsorbierenden Polymeren ist.
11. Abfallkasten, der eine wasserundurchlässige Aufnahmeeinrichtung mit einer darin vorgesehenen Tierabfallzusammensetzung aus einem beliebigen der vorangegangenen Ansprüche aufweist.

12. Verfahren zur selektiven Entfernung von flüssigem Tierabfall aus einem Abfallkasten von Anspruch 11, welches umfaßt, die Tierabfallzusammensetzung in dem Abfallkasten von einem der vorangegangenen Ansprüche mit flüssigem Tierabfall in Kontakt zu bringen, wodurch eine agglomerierte Masse erzeugt wird, die die absorbierende Zusammensetzung und den flüssigen Tierabfall aufweist und von ausreichender Größe und ausreichender Kohäsionskraft ist, um aus dem Abfallkasten entfernt zu werden; und die agglomerierte Masse aus dem Abfallkasten zu entfernen, wodurch der flüssige Tierabfall aus dem Müllkasten entfernt wird.

13. Verfahren nach Anspruch 16, bei dem der flüssige Tierabfall Urin, Erbrochenes oder Blut oder Kombinationen daraus enthält.

Revendications

1. Une composition absorbante pour litière pour animaux capable de s'agglomérer, lorsque mouillée, en une masse de taille et de force d'adhérence suffisantes pour l'enlèvement physique de la masse agglomérée hors de la boîte à litière, ladite composition absorbante comportant au moins 65% en poids de particules d'une argile de bentonite de sodium gonflable par l'eau ayant une granulométrie qui va de 50 microns à 3350 microns.
2. Une composition pour litière pour animaux selon la revendication 1, dans laquelle la composition absorbante comporte au moins 90% en poids d'argile de bentonite de sodium gonflable par l'eau.
3. Une composition pour litière pour animaux selon l'une quelconque des revendications précédentes, qui inclut également de la bentonite de calcium.
4. Une composition pour litière pour animaux selon la revendication 1, 2 ou 3, dans laquelle l'argile de bentonite de sodium est présente en une granulométrie qui va de 50 microns à 600 microns.
5. Une composition pour litière pour animaux selon la revendication 1, 2 ou 3, dans laquelle l'argile de bentonite de sodium gonflable par l'eau est présente en une granulométrie qui va de 600 microns à 3350 microns.
6. Une composition pour litière pour animaux selon la revendication 5, dans laquelle ladite composition absorbante comprend de l'argile de bentonite de sodium gonflable par l'eau ayant une granulométrie essentiellement dans la plage complète.
7. Une composition pour litière pour animaux selon l'une quelconque des revendications précédentes,

dans laquelle l'argile de bentonite de sodium gonflable par l'eau est une argile de bentonite de sodium gonflable par l'eau non calcinée.

8. Une composition pour litière pour animaux selon l'une quelconque des revendications précédentes, dans laquelle ledit produit pour litière contient au moins un composant optionnel sélectionné parmi le groupe consistant en : parfums, désodorisants, adsorbants d'odeurs, agents antimicrobiens, désinfectants, colorants, pesticides, et argile de bentonite autre que la bentonite de sodium et de calcium. 5 10
9. Une composition pour litière pour animaux selon l'une quelconque des revendications précédentes, dans laquelle ladite masse agglomérée mouillée, après avoir été retirée du reste de ladite litière, est caractérisée par la propriété de pouvoir se disperser dans l'eau pour la mise à l'égout. 15 20
10. Une composition pour litière pour animaux selon l'une quelconque des revendications précédentes, dans laquelle ledit produit pour litière est essentiellement exempt de polymères absorbant l'eau. 25
11. Une boîte à litière comportant un récipient imperméable à l'eau dans lequel est disposée une composition pour litière pour animaux de l'une quelconque des revendications précédentes. 30
12. Un procédé d'enlèvement sélectif de déchets animaux liquides hors d'une boîte à litière de la revendication 11, comportant la mise en contact de la composition pour litière pour animaux, dans la boîte à litière, de l'une quelconque des revendications précédentes, avec des déchets animaux liquides, produisant ainsi une masse agglomérée qui comprend la composition absorbante et les déchets animaux liquides, qui est d'une grosseur suffisante et possède une force d'adhérence suffisante pour être enlevée de la boîte à litière ; et enlèvement de la masse agglomérée hors de la boîte à litière, enlevant ainsi de la boîte à litière les déchets animaux liquides. 35 40 45
13. Un procédé selon la revendication 16 [sic] selon lequel les déchets animaux liquides incluent urine, vomissements ou sang, ou des combinaisons de ceux-ci. 50

